

(12) United States Patent

Takamine et al.

(10) Patent No.:

US 6,240,055 B1

(45) Date of Patent:

May 29, 2001

(54) FOCUS POSITION ADJUSTMENT DEVICE AND OPTICAL DISC DRIVE APPARATUS

(75) Inventors: Kouichi Takamine, Kawanishi; Kenji Fujiune, Neyagawa; Akihiro

Hatsusegawa, Kyoto; Hiroyuki Yamaguchi, Nishinomiya, all of (JP)

(73) Assignee: Matsushita Electric Industrial Co., Ltd., Osaka (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/200,009

(22) Filed: Nov. 25, 1998

(30) Foreign Application Priority Data

(51)	Int. Cl. ⁷		G11B 7/00
(52)	U.S. Cl.	•••••	
` ′			369/55.22; 369/53.23

(56) References Cited

U.S. PATENT DOCUMENTS

5,297,114 3/1994 Itoh et al. .

5,351,224	9/1994	Nagata et al
5,481,526	1/1996	Nagata et al
5,568,461	* 10/1996	Nishiuchi et al 369/110
5,751,675	5/1998	Tsutsui et al
5,771,214	* 6/1998	Saga 369/44.25
5,808,983	9/1998	Tsutsui et al

FOREIGN PATENT DOCUMENTS

1307929	12/1989	(JP) .
3259428	11/1991	(JP).
3260916	11/1991	ĴΡ).
4205928	7/1992	ĴΡ).
97193	1/1997	

* cited by examiner

Primary Examiner—Nabil Hindi
(74) Attorney, Agent, or Firm—Price and Gess

(57) ABSTRACT

While discerning whether the laser beam spot is positioned on a land track or a groove track according to the L/G switch signal LGS from the land groove detection unit 34, the focus position rough detection unit 50 and the focus position precise detection unit 60 detect two new focus positions (for the land and the groove) so that the bit error rate BER that is measured in the error rate measurement unit 33 and the envelope of and the jitter in the reproduction signal RF would improve, and output two control signals (FBAL and FOFF) for changing the control target position into the new two focus position to the focus error detection unit 36.1.

43 Claims, 37 Drawing Sheets

